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System for preventing the deformation of sails, such as  
jibs, which are mounted on reels

The present invention relates to a system designed to  
5 prevent the deformation of sails, particularly jibs,  
mounted on reels.

It is known that the jibs which are mounted on reels  
pose a basic problem, when they are being used with a  
10 view to reducing the area of the sail, particularly  
when this sail is half rolled up.

In such a case (see figure 1 of the attached drawings),  
the sail is rolled up more or less flat onto the  
15 cylinder of which the reel 10 is formed, and the fabric  
bunches up towards the center, the belly of the sail  
fabric then tending to accumulate in the remaining  
sail, forming a pocket 12. Furthermore, the deformation  
of the sail and the tension in the leeches and foot  
20 tend to cause the sail to wrinkle on its reel, and this  
has the effect of accentuating the pocket, deforming  
the sail still further.

Such deformations, aside from their disadvantage from  
25 an esthetic standpoint, result in a loss of performance  
of the sail, the area of which has been reduced.

The problem that the present invention sets out to  
solve is of ensuring that, for a given strength of  
30 wind, the sail, the area of which has been reduced by  
rolling up, is adjusted in terms of area, as in a  
conventional reel solution, but also has the shape and  
deformation needed for the forces required by the  
pressure of the wind.

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The solution to this problem is provided, according to  
the invention, by a system for preventing the  
deformation of sails, such as jibs in particular, which

are mounted on reels, comprising means designed to fashion an additional volume in the central part of the reel, characterized in that the sail mounted on said reel is non-deformable in compression around the reel  
5 and parallel to its hoist side, and in that it is produced from a fabric comprising transverse and longitudinal fibers resistive to compression and local buckling, this fabric being incorporated between two films of fine fabric, the whole then being bonded.

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According to a preferred embodiment of the present invention, said films of fine fabric are films of ethylene glycol polyterephthalate.

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According to another aspect of the invention, the means designed to fashion an additional volume in the central part of the reel consists of additional slats or additional fibers in the sail that is to be rolled up, and which form, when the sail is rolled up onto a  
20 cylindrical reel, said additional volume.

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According to another embodiment of the present invention, the means designed to fashion an additional volume in the central part of the reel consists of a biconical reel, possibly reinforced for torsion.

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According to yet another feature of the present invention, the reel is protected by a fairing forming an aerofoil, it being possible for this fairing to be cylindrical, conical or biconical. It may comprise, on its inside, a protruding part in the form of a spoiler which presses against the sail.

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Other features and advantages of the present invention will become apparent from the description given hereinafter, with reference to the attached drawings which illustrate entirely nonlimiting exemplary embodiments thereof. In the drawings:

- figure 1 shows a schematic side elevation of a boat equipped with a reel and with a jib both of which are conventional;
- figure 2 is a view similar to figure 1 depicting  
5 the boat with a reel according to the invention;
- figure 3 is a view similar to figure 1 illustrating an exemplary embodiment of a jib according to the invention;
- figure 4a is a part view, depicting, in plan, the  
10 fabric of a sail according to another exemplary embodiment;
- figure 4b is a section through figure 4a on a vertical plane;
- figure 5 is a view similar to figure 1  
15 illustrating another exemplary embodiment of the invention;
- figure 6 is a view similar to figure 1 illustrating yet another exemplary embodiment of the invention, and
- figure 7 is a section on 7-7 of figure 6, on an  
20 enlarged scale.

As mentioned above, the invention provides means  
allowing the sail to be rendered non-deformable in  
25 compression around the reel and parallel to its hoist side.

According to the exemplary embodiment depicted in  
figures 4a and 4b, the deformability of the sail is  
30 obtained by producing a fabric which comprises fibers  
that are coarse enough and polymerized in such a way as  
to resist compression and local buckling. Such a fabric  
may be produced by incorporating between two films 17,  
17' of fine fabric, for example films of ethylene  
35 glycol polyterephthalate, particularly of the type  
marketed under the trade name "Mylar", transverse and  
longitudinal fibers 18, 18' that are resistant to  
compression, the whole then being bonded. This then  
yields an anisotropic fabric resistant to compression

and also improving the integrity of the sail.

According to the other exemplary embodiment illustrated by figure 3, this non-deformability is obtained by stitching slats such as 16 onto the sail, parallel to its hoist side, the slats being able to be rolled onto the reel.

The invention also provides means which are designed to fashion an additional volume in the central part of the reel. Referring to figure 2, it can be seen that, in this exemplary embodiment of the system according to the invention, the conventional cylindrical reel is replaced by a biconical reel 14 consisting of two frustoconical parts, the vertices of which are positioned at the head 15 and tack 13 respectively. This biconical reel is strengthened for torsion if necessary. By virtue of this biconical reel, an additional volume is obtained in the central part of the reel.

In the exemplary embodiment illustrated by figure 5, use is made of a conventional cylindrical reel 19 and additional slats or additional fibers are provided in the central part of the sail that is to be rolled up, parallel to the hoist side thereof, so as to form, as the sail is rolled up, said additional volume and obtain additional local rigidity. This then yields a solution which is equivalent to that of the biconical reel 14 of figure 2.

According to another aspect of the invention illustrated by figure 7, the reel denoted by the reference 20 is protected by a shaped fairing forming an aerofoil 22. This fairing may be made of any appropriate material such as metal, laminate, extruded plastic, for example. It may be cylindrical, conical or imitation conical or biconical. According to the invention, the fairing 22 comprises, on its inside, a

spoiler 23 designed so that the sail presses against it, which allows the sail to be orientated correctly when partially unrolled, as can be seen clearly in figure 7.

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Of course, the present invention is not restricted to the exemplary embodiments described and depicted hereinabove, but encompasses all variants thereof.